

IN THE CLAIMS:

The following is a complete listing of claims in this application.

Claims 1-20 (canceled).

21. (new) Capping device for screwing a prethreaded sealing cap onto a neck of a receptacle with an axis of symmetry, the neck having a threaded upper portion with height H_f provided with at least one thread with N turns and a lower portion with crimping ring, the sealing cap including a head and a metallic crimpable skirt,

the device comprising:

a capping head;

rotating means for rotating the capping head at a rotation speed Ω about an axis of rotation common with the axis of symmetry; and

axial displacement means for moving the capping head axially closer to and away from the neck which is fixed in axial position during a capping operation;

the capping head comprising:

a bearing head constructed and arranged to retain the cap during screwing and crimping operations, the bearing head being selectively coupled to the capping head for rotation and axial displacement;

resilient means for applying a force varying from 20 to 150 N on the cap through the bearing head during at least a part of the rotating of the capping head;

means for decoupling the bearing head from rotation of the capping head when torque on the bearing head increases beyond a predetermined level, and means for decoupling the bearing head from axial displacement of the capping head when axial displacement of the cap terminates by blocking of further rotation of the cap by the neck of the receptacle, thereby terminating rotation and axial displacement of the

bearing head;

means for crimping the skirt under the crimping ring, and means for coupling the axial displacement means to the crimping means upon termination of rotation and axial movement of the bearing head, thereby activating the crimping means to crimp the skirt under the crimping ring,

wherein the capping operation comprises a rotating step and a crimping step in a single axial displacement of the capping head.

22. (new) Device according to claim 21, wherein the bearing means rotates the cap with a rotation speed close to the rotation speed Ω of the capping head.

23. (new) Device according to claim 21, wherein the crimping means includes at least two arms, each said arm carrying a crimping roller at a lower end thereof, articulated so that it can be brought closer to the neck during the crimping step and moved away from the neck during the screwing step.

24. (new) Device according to claim 21, wherein the capping head additionally comprises a second resilient means for applying an axial force to compress the cap to the neck, upon termination of the screwing and during at least a part of the activation of the crimping means.

25. (new) Device according to claim 24, wherein the axial force varies from 500 N to 1500 N.

26. (new) Device according to claim 23, wherein the capping head comprises:

a) a support fixed to a fixed frame, constructed and arranged for turning about the axis of rotation with the rotation speed Ω predetermined and optionally constant, and constructed and arranged for moving in the axial direction with respect to the neck with an axial displacement,

b) a coaxial tubular body internal to the support and coaxial therewith, constructed and arranged for moving axially with respect to the support with an axial displacement, the support comprising a lower stop to limit the axial displacement of the tubular body and applying a force F_2 on the tubular body using a spring means,

c) a central body, coaxial with the tubular body and fixed to the tubular body for the displacement, the tubular body forming a hub for the central body acting as an axle,

d) a means for selectively coupling the tubular body and the central body C_1 in rotation, rotation of the tubular body only causing a rotation of the central body during the screwing step, rotation of the central body optionally being interrupted by the development of an opposing torque at the end of screwing,

e) the central body comprising a bearing part that will cause rotation of the cap and move axially with respect to the central body with a displacement corresponding to the height of the threaded portion of the cap, an upper stop for the bearing part and a spring means applying the force F_0 on the bearing part to provide coupling of the capping head through the bearing part and the cap in rotation, and to form the screwing means,

f) the arms or lifting beams of the crimping means axially fixed to the tubular body and rotatable on a secondary rotation axis fixed to the tubular body.

27. (new) Device according to claim 26, wherein the crimping means includes a cam axially fixed to the support, each of the rigid arms comprising an upper part provided with a caster or a wheel or a sliding pad, and a roller support arm supporting the roller, such that the second displacement causes a temporary cooperation of the cam and the wheel or pad, bringing the roller closer to the neck for the crimping.

28. (new) Device according to claim 26, wherein the support of the capping head is fixed to an arm, and is free in rotation with respect to the arm, the support and the arm respectively forming an axle / hub assembly, the arm optionally acting as a support for a motor forming the rotation means capable of driving the support in rotation.

29. (new) Device according to claim 28, wherein the arm and the fixed frame cooperate using a vertical column to assure the axial displacement of the support by translation of the arm in a vertical plane by means of an auxiliary motor acting as an axial displacement means.

30. (new) Device according to claim 28, wherein the arm is placed onboard a rotary turret and forms part of a set of n capping heads, where n varies from 2 to 12, the supports being engaged to a central gearwheel to rotate the supports.

31. (new) Device according to claim 26, wherein the means for selectively coupling comprises a magnetic or electromagnetic coupling.

32. (new) Device according to claim 26, wherein, at the end of the screwing step, the bearing part is movable into contact with the upper stop so that the central body and the tubular body can transmit the force F_2 to the cap.

33. (new) Device according to claim 21, wherein the rotation speed Ω and displacement speed of the capping head during initial displacement are slaved to satisfy a relation $V = H_f \cdot \Omega / N$, thereby synchronizing rotation of the cap and lowering the cap onto the neck during the screwing step, H_f being between 5 mm and 20 mm, Ω being between 150 rpm and 500 rpm and N being between 10 and 25 turns.